



MONTANA SULPHUR & CHEMICAL COMPANY

Section 1: Product Information

Product Identifier: Yellowstone Brand HighPurity Sulfur, Yellowstone Brand SugarHouse Flake Sulfur
Synonyms: Sulfur, Prilled Sulfur, SugarHouse Flake Sulfur, Solid Sulfur, Flaked Sulfur, Pastille Sulfur, Brimstone, Crude Sulfur, Elemental Sulfur, Sulphur, Lump Sulfur
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Recommended use:

Burning for the production of sulfur dioxide (SO₂) used in specialized equipment (e.g. agricultural water treatment, pollution control, and sugar manufacturing); specialty chemical compounding, manufacturing. (Not intended for direct soil amendment or plant nutrient use in its raw, unconverted form.)

Section 2: Hazard Identification

Hazard Classification: Skin Irritation Category 2
Eye Irritation-Category 2B
Other Hazards: May form combustible dust concentrations in enclosed spaces during handling. Combustion produces sulfur dioxide. May contain or release hydrogen sulfide, a toxic gas under some conditions.

Label Elements:



Warning: may cause eye irritation. May cause skin irritation with prolonged exposure. May form combustible dust concentrations in air if crushed, abraded or impacted. Wear protective gloves and eye protection. Wash hands and face and exposed skin thoroughly after handling. If on skin, wash with plenty of water. If in eyes, rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. If other than minor skin irritation occurs or if eye irritation persists, get medical advice/attention.

Section 3: Composition / Information on Ingredients

Chemical Name	Common Name/Synonyms	CAS Number	Percent (%)
Sulfur	Sulphur, sulfur, brimstone	7704-34-9	>99

Section 4: First Aid Measures

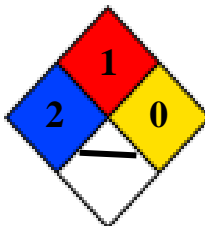
Eye Contact: Immediately flush eyes with large amounts of water for at least 15 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention if irritation persists.
Skin Contact: Wash affected area with soap and water. Prolonged contact with skin may cause dryness. Contact with molten sulfur can cause thermal burns: immediately flood with cool water.
Inhalation: If respiratory irritation or symptoms occur, move the victim to fresh air. If symptoms persist, seek medical advice or attention. If the victim is not breathing, administer artificial respiration. Keep victim at rest. Give Cardiopulmonary Resuscitation (CPR) only if there is no pulse and no breathing, and immediately obtain medical attention.

Ingestion: If ingested and symptoms develop, consult a physician. Sulfur is not considered toxic and has been used medically in the past in laxatives, alteratives, antiseptics, anti-parasitics and is a common component of animal feeds.

Section 5: Fire Fighting Measures

National Fire Protection Association:

Health: 2 Flammability: 1 Instability: 0



0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

Extinguishing media:

Use water, water mist, water fog, dirt, sand, or a carbon dioxide blanket to extinguish a fire. Hi-velocity jets of water or gas should be avoided as these will tend to spread and splash burning material over a larger area. Gentle water sprays or flooding work best. Damage can be minimized by smothering (closing off all air) or with inert gas (e.g. carbon dioxide) flooding.

Specific Hazards Arising from the Chemical:

The combustion product is sulfur dioxide, an irritating, toxic gas that smells like burning match heads, and produces eye and throat irritation, severe coughing, if present in sufficient concentrations.

Protect skin from thermal burns caused by contact with molten sulfur. After a fire is extinguished, post a fire watch for at least 4 hours as small fires are easy to miss and can linger for hours. Re-ignition may occur. Sulfur burns with a short blue flame that is almost invisible by daylight except by smoke and heat. Burning sulfur turns a deep red-black color.

Special Precautions for Fire-Fighters:

Appropriate personal protective equipment should be worn. Stay upwind, do not inhale combustion products. When the chemical hazard of a fire is unknown or the fire is in an enclosed or confined space, self contained, full-face breathing apparatus should be worn. Wear all other personal protective equipment as normal or as conditions warrant. Avoid raising dust or scattering the burning sulfur material. Avoid skin contact with hot molten sulfur. For nearby fires, keep exterior of adjacent sulfur tanks and bins cool with water spray to help prevent ignition. Water fog can be used to suppress sulfur dioxide arising from combustion.

Section 6: Accidental Release Measures

Avoid creating sparks and setting fire to spilled material. Have proper extinguishing media present. Utilize proper eye, face and respiratory protection. Small spills may be cleaned up with a non-sparking scoop, dustpan and broom. Use of common vacuum cleaners is not recommended. Large spills may be cleaned up with equipment such as skid loaders, front end loaders, etc. However, avoid creating dust and avoid dragging the blade on concrete or rocks as this may cause sparks that could ignite dust or dust-air mixtures. Moistening with water may help suppress dust. Post a fire watch until danger of fire has passed.

Section 7: Handling and Storage

Handle loose product with well grounded non-sparking process/storage equipment. Dry sulfur materials may generate static electricity and sparking during conveying or grinding. Avoid handling sulfur at high velocity in air, such as pneumatic conveying. Inert gas blanketing is useful in preventing fires and explosions in processing and grinding equipment. Do not use near sparking equipment, smoking materials, or open flames. When handling loose, bulk sulfur use special care to prevent steel forks, loader buckets, tools, etc. from dragging on concrete (sparks) and to prevent crushing the product with equipment which will create dust. Exclude rocks, sand, loose iron, and other tramp material from entering augers, elevator legs, or other mechanical handling systems. (Tramp material will cause sparking). Use good housekeeping practice; do not allow large amounts of waste to accumulate. Use of common vacuum cleaners is **not** recommended.

Enclosed equipment containing dust suspended in air should be adequately explosion vented or strong enough to withstand the pressures developed in a dust explosion. Do not store near strong oxidizing materials, or near hot equipment. Handle product gently and keep product dry prior to use to prevent unintended premature product degradation. In the presence of

moisture and air over long periods of time, sulfur will slowly convert to weak sulfuric acid which is corrosive to some metals and attacks paper, concrete, wood products etc.

Section 8: Exposure Control / Personal Protection

- Respiratory Protection:** Recommend dust masks suitable for use with nuisance dust. Indoor areas should have sufficient local exhaust to remove dust that is released into the air
- Eye Protection:** Is recommended around dust for personal comfort
- Skin & General:** Work gloves and long sleeved shirts etc. help keep material off of skin of persons prone to skin irritation and dermatitis. Use of a good skin moisturizer before and after exposure may help to avert dry skin problems and discomfort. Be sure to select a skin care product which you are not allergic to.
- Work & Hygienic Practices:** When working with sulfur, wash exposed skin with soap and water after work periods and before breaks. Use clean work clothing each day. Avoid rubbing your eyes which can transfer sulfur to your eyes.
- Engineering Controls:** In areas where airborne concentrations may exceed allowable limits, it is recommended that ventilation systems be used. This could include, but is not limited to, exhaust fans. Where dust handling systems are used, ensure they are non-sparking and do not discharge into enclosed spaces. Where feasible, the use of an oxygen deficient environment (e.g. inert gas) is recommended for handling product in dust-producing activities in enclosed spaces in order to prevent combustible dust-air mixtures.

Component	ACGIH	OSHA PEL
Sulfur	TWA 10 mg/m ³ - 8 hr. total as nuisance dust	TWA: 15 mg/m ³ - as nuisance dust
Sulfur Dioxide (will form in combustion event)	TLV: 2 ppm STEL: 5ppm	TWA 5 ppm,
Hydrogen Sulfide (trace, may form in some reaction conditions)	STEL: 5 ppm TWA: 1 ppm	Max: 20 ppm

ACGIH-American Conference of Governmental Industrial Hygienists; TWA-8-hour time weighted average; TLV-Threshold Limit Value;

Section 9: Physical and Chemical Properties

Appearance: Bright Yellow flakes, crystals, pastilles, prills, powders or granules;

Odor: very slight, sweet to mercaptan-like.
 Odor Threshold: No data available
 pH: Not applicable
 Melting Point: 231-246°F/ 110 C
 Boiling Point: 832.3° F/ 444 C
 Flash Point: 405°F/ 207 C
 Evaporation Rate: Not applicable
 Flammability: Combustible dust
 Lower Level Flammability Limit: 35 g/m³

Upper Level Flammability Limit: 1400 g/m³
 Vapor Pressure: 1.15 X 10[E-4] (mm.Hg) @ 140° F.;
 Vapor Density at boiling point: 0.2278 lbs./ft³
 Relative Density: No data available. See specific gravity.
 Solubility: Insoluble (water)
 Partition Coefficient (n-octanol/water): No data available
 Auto-ignition temperature: ~450°F/ 232 C
 Decomposition temperature: No data available
 Viscosity: Not applicable (solid)
 Specific Gravity: ~2.07 @ 77° F.;

Section 10: Stability and Reactivity

Reactivity: Stable
Chemical Stability: Stable

Conditions to Avoid: Unintentional ignition. Mixtures of air and sulfur dust; sparks or open flames; mixtures of sulfur and strong oxidizing agents in general: large accumulations of sulfur dust which could become airborne in an explosion or process disruption caused by other materials. Examples of common strong oxidizing agents are perchlorates, nitrates, chlorates, permanganates, peroxides, oxygen, and halogens. At very high temperatures, sulfur can combine with hydrogen donors (e.g. hydrocarbons) to form hydrogen sulfide, a toxic, flammable gas, which also burns in air to form sulfur dioxide.

General Information: Solid sulfur is satisfactorily compatible with common materials of construction including steel and aluminum. Molten sulfur may degrade rubber and some plastics. Sulfur can form sulfides with most metals, including iron under some low-oxygen conditions, and reacts vigorously with metals in the Sodium and Magnesium groups on the periodic table. Sulfides of iron will oxidize fairly rapidly in moist air, liberating heat. In the presence of other readily oxidized combustibles (such as some oily materials) under certain conditions, the heat liberated may be sufficient to result in spontaneous ignition. This phenomenon has not been observed with these pure Sulfur products in contact with unprotected steel at ordinary ambient temperatures, however. Users are cautioned against allowing inadvertent mixtures/piles of sulfur, iron, and miscellaneous oils to remain. Oxidation is accelerated by higher temperatures. Heat buildup and ignition can be prevented by keeping sulfides wet until oxidation is complete. The literature on sulfur is extensive. Consult a chemist before compounding.

Section 11: Toxicological Information

Inhalation: Unlikely to be harmful, but may cause irritation
Skin Contact: Unlikely to be harmful, but may cause irritation
Eye Contact: Unlikely to be harmful, but may cause irritation

Carcinogenic effects: Sulfur is NOT listed as a Carcinogen or as a Potential Carcinogen under the National Toxicology Program of IARC or by OSHA.

Section 12: Ecological Information

The product itself and its products of natural aerobic degradation are not deemed toxic in normal usages. Soil bacteria metabolize sulfur to sulfates (a plant nutrient) in the presence of oxygen and moisture. High accumulations in soil may become acidic if natural soil alkalinity is depleted, hence sulfur's traditional use as a soil amendment.

Section 13: Disposal Considerations

Waste disposal: The generation of waste should be avoided or minimized. Disposal of this product and any by-products must comply with all local, state, and federal requirements. Disposal is usually in covered landfill. Incineration will produce sulfur dioxide. Consult your local and/or regional authorities.

Section 14: Transport Information

For Domestic Shipments:
Shipping Description: Sulfur
Shipping Description: NA1350, SULFUR, 9, PG III

For International Shipments:
Commodity Name: Sulfur
Shipping Description: UN1350, SULFUR, 4.1, PG III

Solid sulfur is not considered Hazardous Material if transported in a non-bulk packaging or if formed to a specific shape (for example: prills, granules, pellets, pastilles, or flakes) per 49CFR, Sections 172.102(c)(1)(Provision 30)

Section 15: Regulatory Information

U.S. Federal regulations:
Clean Air Act (CAA) 112 accidental release prevention: Sulfur Dioxide (e.g. fire); Hydrogen Sulfide
Clean Air Act (CAA) 112 regulated toxic substances: Sulfur Dioxide (e.g. fire); Hydrogen Sulfide

Section 16: Other Information

Hazardous Material Information System (HMIS)

Health	2
Fire hazard	1
Physical Hazard	0
Personal protection	G

This product is warranted to be of a sulfur analysis (percentage) not lower than described. NO OTHER WARRANTY IS EXPRESSED OR IMPLIED and ANY SUCH OTHER WARRANTIES ARE DISCLAIMED by Montana Sulphur & Chemical Company. Up evidence satisfactory to the Company that the sulfur content of this product is not warranted, Montana Sulphur & Chemical Company will, at its sole option, cure the defect, replace the product, or refund the price paid Montana Sulphur & Chemical Company by the original purchaser.

Because conditions and methods of handling, use and disposal of these products vary and are beyond the control of the manufacturer, Montana Sulphur & Chemical Company is not liable for any injury or damage, direct, indirect, or consequential, to purchasers, users, or any other person. Read the Safety Data Sheet for this product before handling. Seek competent advice as to particular uses and application rates. Misuse of this product, like any product, may result in personal injury or property damage. User assumes responsibility for the handling, use and disposal of the product and packaging.

The information provided in this document is believed to be accurate; however, it is offered without warranty and is subject to change without notice.

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